

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US05/04748

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : F25B 9/00; F16K 39/00, 5/00  
US CL : 62/6; 251/283, 314

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 62/6; 251/283, 314

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
None

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
None

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,878,580 A (SCHILLING et al) 09 March 1999 (09.03.1999), see entire document especially figures.	1-11
Y	US 6,434,947 B2 (Zhu et al) 20 August 2002 (20.08.2002), see entire document.	1-11
Y	US 5,974,807 A (GAO et al) 02 November 1999 (02.11.1999), see entire document.	1,2 and 4-11
A	US 6,460,349 B1 (KAWANO et al) 08 October 2002 (08.10.2002), see entire document.	1-11
A	US 2003/0089116 A1 (HERON) 15 May 2003 (15.05.2003), see entire document.	1-11
A	US 5,711,156 A (MATSUI et al) 27 January 1998 (27.01.1998), see entire document.	1-11
A	US 6,378,312 B1 (WANG) 30 April 2002 (30.04.2002), see entire document.	1-11

Further documents are listed in the continuation of Box C.  See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

16 May 2005 (16.05.2005)

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